

I CLAIM:

1. A method of encoding a coded representation of a digital image, wherein the coded representation includes a non-redundant hierarchical code, having one low frequency subband and a plurality of high frequency subbands arranged in levels, which levels combine to represent multiple resolutions of the image, said method including the steps of:
 - a) dividing each subband into a plurality of tiles;
 - b) entropy encoding each tile;
 - c) selecting a plurality of desired resolutions from said multiple resolutions; and
 - d) arranging in contiguous manner, for each level between each pair of adjacent selected resolutions, each entropy encoded tile representing substantially the same portion of image into a bit stream.
2. The method as claimed in claim 1, wherein the coded representation is a multiple level discrete wavelet transform of the digital image.
3. The method as claimed in claim 1, wherein the subbands are arranged in levels of decreasing order.
4. The method as claimed in claim 1, wherein the entropy encoded step further includes a quantisation step.
5. A method of encoding a digital image, to provide substantially random access to portions of said image at a plurality of nominated resolutions, said method including the steps of:
 - applying a linear transform to said image to produce a plurality of transform coefficients in a frequency domain;
 - grouping the transform coefficients into frequency subbands, each subband representing a range of frequencies of the image, wherein said grouping is characterised by one low frequency subband and a plurality of high frequency subbands arranged in levels, and wherein each level represents frequency contributions between adjacent nominated resolutions of the image;
 - dividing each frequency subband into a plurality of tiles, each tile comprising at least one of said transform coefficient;
 - quantising and entropy coding each said tile; and

arranging in a contiguous manner, for each level, those encoded tiles which substantially correspond to the same portions of the image into a bit stream.

6. A method of encoding a digital image into a bit stream, to provide substantially random access to portions of said image at a plurality of nominated resolutions, said method including the steps of:

applying a discrete wavelet transform to said image to produce a non-redundant multiple resolution frequency domain representation of the image, said representation comprising one low frequency subband and a plurality of high frequency subbands arranged in levels, wherein each level represents frequency contributions between adjacent resolutions of the image;
dividing each frequency subband into a plurality of tiles;
quantising and entropy coding each said tile;
nominating desired resolutions of the digital image; and
arranging in a contiguous manner, for each level between nominated resolutions, those tiles which substantially correspond to the same portions of the image into the bit stream.

7. A method of encoding a digital image including the steps of:

applying a linear transform to said image to produce a non-redundant multiple resolution frequency domain representation of the image, said representation comprising a plurality of levels, wherein each level represents frequency contributions between adjacent resolutions of the image;
dividing said non-redundant multiple resolution frequency domain representation into a plurality of tiles;
quantising and entropy coding each said tile;
nominating desired resolutions of the digital image; and
arranging contiguous manner, for each level between nominated resolutions, those tiles which substantially correspond to the same portions of the image.

8. A method of encoding a coded representation of a digital image, wherein the coded representation includes a non-redundant hierarchical code, having one low frequency subband and a plurality of high frequency subbands arranged in levels, which levels combine to represent multiple resolutions of the image; said method including the steps of:

- a) dividing each subband into a plurality of tiles;
- b) selecting a predetermined number of said levels from said multiple resolutions;
- c) entropy encoding each tile;
- d) processing said selected levels in a predetermined sequential order; and
- e) arranging in contiguous manner, for each level in said sequence to a current level not processed in step d), each entropy encoded tile representing substantially the same portion of image into a bit stream.

9. A method of encoding a digital image into a bit stream, said method including the steps of:

applying a discrete wavelet transform to said image to produce a non-redundant multiple resolution frequency domain representation of the image, said representation comprising one low frequency subband and a plurality of high frequency subbands arranged in levels, wherein each level represents frequency contributions between adjacent resolutions of the image;

dividing each frequency subband into a plurality of tiles;

quantising and entropy coding each said tile;

arranging into said bit stream in a predetermined order each said entropy tile of a DC subband; and

arranging in a contiguous manner each set of three encoded tiles belonging to each of three AC subbands respectively, which substantially correspond to the same portions of the image at each level, into the bit stream.

10. A method of encoding a digital image into a bit stream, said method including the steps of:

applying a discrete wavelet transform to said image to produce a non-redundant multiple resolution frequency domain representation of the image, said representation comprising a DC subband and a plurality of AC subbands arranged in a hierarchical structure having a plurality of levels, wherein each level represents frequency contributions between adjacent resolutions of the image;

dividing each frequency subband into a plurality of tiles;

grouping each tile, substantially corresponding to a same portion of the digital image, at each level of the AC subbands into tile triplets;

entropy coding each tile of a DC subband and each tile triplet of the AC subbands;

5 arranging in a predetermined order each said entropy tile of a DC subband and each entropy encoded tile triplet into a sequential stream.

11. The method as claimed in claim 10, wherein said levels are arranged in a hierarchical structure comprising the DC subband and the AC subbands, which AC subbands are arranged in decreasing level order substantially according to their increasing
10 subband frequency.

12. The method as claimed in claim 11, wherein the step of arranging tiles of the AC subbands is further performed in decreasing level order.

13. The method as claimed in claim 1, wherein each tile comprises a plurality of transform coefficients.

15 14. The method as claimed in claim 13, wherein the step or steps of arranging tiles further includes arranging transform coefficients into said bit stream in a predetermined order.

15. The method as claimed in claim 14, wherein the predetermined order is a raster order of the coefficients in each tile.

20 16. The method as claimed in claim 14, wherein the predetermined order is an interleaving of binary bits of the coefficients in each tile.

17. A method of encoding a sequential stream of data for providing substantially random access to portions of an image at a plurality of predetermined resolutions, said stream including a non-redundant multiple resolution frequency domain representation of
25 the image, said representation comprising one low frequency subband and a plurality of high frequency subbands arranged in levels, wherein each subband is divided into a plurality of tiles and each level represents frequency contributions between adjacent resolutions of the image, and wherein each tile represents a frequency contribution to a portion of the image at a predetermined resolution, said method including: inserting at
30 most one pointer in said sequential stream for each set of tiles which correspond to substantially a same spatial portion of the image for each level to access a portion of the digital image.

18. A method of decoding a sequential stream of data for providing substantially random access to portions of an image at a plurality of predetermined resolutions, said stream including a non-redundant multiple resolution frequency domain representation of the image, said representation comprising one low frequency subband and a plurality of high frequency subbands arranged in levels, wherein each subband is divided into a plurality of tiles and each level represents frequency contributions between adjacent resolutions of the image, and wherein each tile represents a frequency contribution to a portion of the image at a predetermined resolution, said method including: retrieving at most one pointer in said sequential stream for each set of tiles which correspond to substantially a same spatial portion of the image for each level to access a portion of the digital image.

19. The method as claimed in claim 18, wherein assessing said portion includes decoding a data address by said pointer.

20. The method as claimed in claim 18, wherein said sequential stream is a bit stream.

21. An apparatus for encoding a coded representation of a digital image, wherein the coded representation includes a non-redundant hierarchical code, having one low frequency subband and a plurality of high frequency subbands arranged in levels, which levels combine to represent multiple resolutions of the image, said apparatus including:

means for dividing each subband into a plurality of tiles;

means for entropy encoding each tile;

means for selecting a plurality of desired resolutions from said multiple resolutions; and

means for arranging in contiguous manner, for each level between each pair of adjacent selected resolutions, each entropy encoded tile representing substantially the same portion of image into a bit stream.

22. The apparatus as claimed in claim 21, wherein the coded representation is a multiple level discrete wavelet transform of the digital image.

23. The apparatus as claimed in claim 21, wherein the subbands are arranged in levels of decreasing order.

24. The apparatus as claimed in claim 21, wherein the entropy encoding means further includes quantisation means.

25. An apparatus for encoding a digital image, to provide substantially random access to portions of said image at a plurality of nominated resolutions, said apparatus including:

means for applying a linear transform to said image to produce a plurality of transform coefficients in a frequency domain;

means for grouping the transform coefficients into frequency subbands, each subband representing a range of frequencies of the image, wherein said grouping is characterised by one low frequency subband and a plurality of high frequency subbands arranged in levels, and wherein each level represents frequency contributions between adjacent nominated resolutions of the image;

means for dividing each frequency subband into a plurality of tiles, each tile comprising at least one of said transform coefficient;

means for quantising and entropy coding each said tile; and

means for arranging in a contiguous manner, for each level, those encoded tiles which substantially correspond to the same portions of the image into a bit stream.

26. An apparatus for encoding a digital image into a bit stream, to provide substantially random access to portions of said image at a plurality of nominated resolutions, said apparatus including:

means for applying a discrete wavelet transform to said image to produce a non-redundant multiple resolution frequency domain representation of the image, said representation comprising one low frequency subband and a plurality of high frequency subbands arranged in levels, wherein each level represents frequency contributions between adjacent resolutions of the image;

means for dividing each frequency subband into a plurality of tiles;

means for quantising and entropy coding each said tile;

means for nominating desired resolutions of the digital image; and

means for arranging in a contiguous manner, for each level between nominated resolutions, those tiles which substantially correspond to the same portions of the image into the bit stream.

27. An apparatus for encoding a digital image including:

means for applying a linear transform to said image to produce a non-redundant multiple resolution frequency domain representation of the image, said representation comprising a plurality of levels, wherein each level represents frequency contributions between adjacent resolutions of the image;

5 means for dividing said non-redundant multiple resolution frequency domain representation into a plurality of tiles;

means for quantising and entropy coding each said tile;

means for nominating desired resolutions of the digital image; and

10 means for arranging contiguous manner, for each level between nominated resolutions, those tiles which substantially correspond to the same portions of the image.

28. An apparatus for encoding a coded representation of a digital image, wherein the coded representation includes a non-redundant hierarchical code, having one low frequency subband and a plurality of high frequency subbands arranged in levels, which
15 levels combine to represent multiple resolutions of the image, said apparatus including:

means for dividing each subband into a plurality of tiles;

means for selecting a predetermined number of said levels from said multiple resolutions;

means for entropy encoding each tile;

20 means for processing said selected levels in a predetermined sequential order; and

means for arranging in contiguous manner, for each level in said sequence to a current level not processed by said processing means, each entropy encoded tile representing substantially the same portion of image into a bit stream.

25 29. An apparatus for encoding a digital image into a bit stream, said apparatus including:

means for applying a discrete wavelet transform to said image to produce a non-redundant multiple resolution frequency domain representation of the image, said representation comprising one low frequency subband and a plurality of high frequency
30 subbands arranged in levels, wherein each level represents frequency contributions between adjacent resolutions of the image;

means for dividing each frequency subband into a plurality of tiles;

means for quantising and entropy coding each said tile;

means for arranging into said bit stream in a predetermined order each said entropy tile of a DC subband; and

means for arranging in a contiguous manner each set of three encoded tiles belonging to each of three AC subbands respectively, which substantially correspond to the same portions of the image at each level, into the bit stream.

30. An apparatus for encoding a digital image into a bit stream, said apparatus including:

means for applying a discrete wavelet transform to said image to produce a non-redundant multiple resolution frequency domain representation of the image, said representation comprising a DC subband and a plurality of AC subbands arranged in a hierarchical structure having a plurality of levels, wherein each level represents frequency contributions between adjacent resolutions of the image;

means for dividing each frequency subband into a plurality of tiles;

means for grouping each tile, substantially corresponding to a same portion of the digital image, at each level of the AC subbands into tile triplets;

means for entropy coding each tile of a DC subband and each tile triplet of the AC subbands;

means for arranging in a predetermined order each said entropy tile of a DC subband and each entropy encoded tile triplet into a sequential stream.

31. The apparatus claimed in claim 30, wherein said levels are arranged in a hierarchical structure comprising the DC subband and the AC subbands, which AC subbands are arranged in decreasing level order substantially according to their increasing subband frequency.

32. The apparatus as claimed in claim 31, wherein the arranging means arranges the AC subbands in decreasing level order.

33. The apparatus as claimed in claim 21, wherein each tile comprises a plurality of transform coefficients.

34. The apparatus as claimed in claim 33, wherein the arranging means further includes means for arranging transform coefficients into said bit stream in a predetermined order.

35. The apparatus as claimed in claim 34, wherein the predetermined order is a raster order of the coefficients in each tile.

36. The apparatus as claimed in claim 34, wherein the predetermined order is an interleaving of binary bits of the coefficients in each tile.

5 37. An apparatus for encoding a sequential stream of data for providing substantially random access to portions of an image at a plurality of predetermined resolutions, said stream including a non-redundant multiple resolution frequency domain representation of the image, said representation comprising one low frequency subband and a plurality of high frequency subbands arranged in levels, wherein each subband is divided into a
10 plurality of tiles and each level represents frequency contributions between adjacent resolutions of the image, and wherein each tile represents a frequency contribution to a portion of the image at a predetermined resolution, said apparatus including: means for inserting at most one pointer in said sequential stream for each set of tiles which correspond to substantially a same spatial portion of the image for each level to access a
15 portion of the digital image.

38. An apparatus for decoding a sequential stream of data for providing substantially random access to portions of an image at a plurality of predetermined resolutions, said stream including a non-redundant multiple resolution frequency domain representation of the image, said representation comprising one low frequency subband and a plurality of
20 high frequency subbands arranged in levels, wherein each subband is divided into a plurality of tiles and each level represents frequency contributions between adjacent resolutions of the image, and wherein each tile represents a frequency contribution to a portion of the image at a predetermined resolution, said apparatus including: means for retrieving at most one pointer in said sequential stream for each set of tiles which
25 correspond to substantially a same spatial portion of the image for each level to access a portion of the digital image.

39. The apparatus as claimed in claim 38, wherein assessing said portion includes decoding a data address by said pointer.

40. The apparatus as claimed in claim 38, wherein said sequential stream is a bit
30 stream.

41. A computer program product comprising a computer readable medium having recorded thereon a computer program for encoding a coded representation of a digital

image, wherein the coded representation includes a non-redundant hierarchical code, having one low frequency subband and a plurality of high frequency subbands arranged in levels, which levels combine to represent multiple resolutions of the image, said computer program product including:

- 5 means for dividing each subband into a plurality of tiles;
- means for entropy encoding each tile;
- means selecting a plurality of desired resolutions from said multiple resolutions;
- and
- means for arranging in contiguous manner, for each level between each pair of
- 10 adjacent selected resolutions, each entropy encoded tile representing substantially the same portion of image into a bit stream.

42. The computer program product as claimed in claim 41, wherein the coded representation is a multiple level discrete wavelet transform of the digital image.

43. The computer program product as claimed in claim 41, wherein the subbands are

15 arranged in levels of decreasing order.

44. The computer program product as claimed in claim 41, wherein the entropy encoding means further includes quantisation means.

45. A computer program product comprising a computer readable medium having recorded thereon a computer program for encoding a digital image, to provide

20 substantially random access to portions of said image at a plurality of nominated resolutions, said computer program product including:

- means for applying a linear transform to said image to produce a plurality of transform coefficients in a frequency domain;
- means for grouping the transform coefficients into frequency subbands, each
- 25 subband representing a range of frequencies of the image, wherein said grouping is characterised by one low frequency subband and a plurality of high frequency subbands arranged in levels, and wherein each level represents frequency contributions between adjacent nominated resolutions of the image;
- means for dividing each frequency subband into a plurality of tiles, each tile
- 30 comprising at least one of said transform coefficient;
- means for quantising and entropy coding each said tile; and

means for arranging in a contiguous manner, for each level, those encoded tiles which substantially correspond to the same portions of the image into a bit stream.

46. A computer program product comprising a computer readable medium having recorded thereon a computer program for encoding a digital image into a bit stream, to provide substantially random access to portions of said image at a plurality of nominated resolutions, said computer program product including:

means for applying a discrete wavelet transform to said image to produce a non-redundant multiple resolution frequency domain representation of the image, said representation comprising one low frequency subband and a plurality of high frequency subbands arranged in levels, wherein each level represents frequency contributions between adjacent resolutions of the image;

means for dividing each frequency subband into a plurality of tiles;

means for quantising and entropy coding each said tile;

means for nominating desired resolutions of the digital image; and

means for arranging in a contiguous manner, for each level between nominated resolutions, those tiles which substantially correspond to the same portions of the image into the bit stream.

47. A computer program product comprising a computer readable medium having recorded thereon a computer program for encoding a digital image, said computer program product including:

means for applying a linear transform to said image to produce a non-redundant multiple resolution frequency domain representation of the image, said representation comprising a plurality of levels, wherein each level represents frequency contributions between adjacent resolutions of the image;

means for dividing said non-redundant multiple resolution frequency domain representation into a plurality of tiles;

means for quantising and entropy coding each said tile;

means for nominating desired resolutions of the digital image; and

means for arranging contiguous manner, for each level between nominated resolutions, those tiles which substantially correspond to the same portions of the image.

48. A computer program product comprising a computer readable medium having recorded thereon a computer program for encoding a coded representation of a digital image, wherein the coded representation includes a non-redundant hierarchical code, having one low frequency subband and a plurality of high frequency subbands arranged in levels, which levels combine to represent multiple resolutions of the image, said computer program product including:

means for dividing each subband into a plurality of tiles;

means for selecting a predetermined number of said levels from said multiple resolutions;

means for entropy encoding each tile;

means for processing said selected levels in a predetermined sequential order; and

means for arranging in contiguous manner, for each level in said sequence to a current level not processed by said processing means, each entropy encoded tile representing substantially the same portion of image into a bit stream.

49. A computer program product comprising a computer readable medium having recorded thereon a computer program for encoding a digital image into a bit stream, said computer program product including:

means for applying a discrete wavelet transform to said image to produce a non-redundant multiple resolution frequency domain representation of the image, said representation comprising one low frequency subband and a plurality of high frequency subbands arranged in levels, wherein each level represents frequency contributions between adjacent resolutions of the image;

means for dividing each frequency subband into a plurality of tiles;

means for quantising and entropy coding each said tile;

means for arranging into said bit stream in a predetermined order each said entropy tile of a DC subband; and

means for arranging in a contiguous manner each set of three encoded tiles belonging to each of three AC subbands respectively, which substantially correspond to the same portions of the image at each level, into the bit stream.

50. A computer program product comprising a computer readable medium having recorded thereon a computer program for encoding a digital image into a bit stream, said computer program product including:

means for applying a discrete wavelet transform to said image to produce a non-redundant multiple resolution frequency domain representation of the image, said representation comprising a DC subband and a plurality of AC subbands arranged in a hierarchical structure having a plurality of levels, wherein each level represents frequency contributions between adjacent resolutions of the image;

means for dividing each frequency subband into a plurality of tiles;

means for grouping each tile, substantially corresponding to a same portion of the digital image, at each level of the AC subbands into tile triplets;

means for entropy coding each tile of a DC subband and each tile triplet of the AC subbands;

means for arranging in a predetermined order each said entropy tile of a DC subband and each entropy encoded tile triplet into a sequential stream.

51. The computer program product as claimed in claim 50, wherein said levels are arranged in a hierarchical structure comprising the DC subband and the AC subbands, which AC subbands are arranged in decreasing level order substantially according to their increasing subband frequency.

52. The computer program product as claimed in claim 51, wherein the arranging means arranges AC subbands in decreasing level order.

53. The computer program product as claimed in claim 51, wherein each tile comprises a plurality of transform coefficients.

54. The computer program product as claimed in claim 53, wherein the arranging means further includes means for arranging transform coefficients into said bit stream in a predetermined order.

55. The computer program product as claimed in claim 54, wherein the predetermined order is a raster order of the coefficients in each tile.

56. The computer program product as claimed in claim 54, wherein the predetermined order is an interleaving of binary bits of the coefficients in each tile.

57. A computer program product comprising a computer readable medium having recorded thereon a computer program for encoding a sequential stream of data for providing substantially random access to portions of an image at a plurality of predetermined resolutions, said stream including a non-redundant multiple resolution frequency domain representation of the image, said representation comprising one low frequency subband and a plurality of high frequency subbands arranged in levels, wherein each subband is divided into a plurality of tiles and each level represents frequency contributions between adjacent resolutions of the image, and wherein each tile represents a frequency contribution to a portion of the image at a predetermined resolution, said computer program product including: means for inserting at most one pointer in said sequential stream for each set of tiles which correspond to substantially a same spatial portion of the image for each level to access a portion of the digital image.

58. A computer program product comprising a computer readable medium having recorded thereon a computer program for decoding a sequential stream of data for providing substantially random access to portions of an image at a plurality of predetermined resolutions, said stream including a non-redundant multiple resolution frequency domain representation of the image, said representation comprising one low frequency subband and a plurality of high frequency subbands arranged in levels, wherein each subband is divided into a plurality of tiles and each level represents frequency contributions between adjacent resolutions of the image, and wherein each tile represents a frequency contribution to a portion of the image at a predetermined resolution, said computer program product including: means for retrieving at most one pointer in said sequential stream for each set of tiles which correspond to substantially a same spatial portion of the image for each level to access a portion of the digital image.

59. The computer program product claimed in claim 58, wherein assessing said portion includes decoding a data address by said pointer.

60. The computer program product as claimed in claim 58, wherein said sequential stream is a bit stream.

61. A method of encoding a digital image, the method including the steps of:
applying a linear transform to said image to produce a non-redundant multiple resolution frequency domain representation of the image, said representation comprising one low frequency subband and a plurality of high frequency

subbands arranged in levels, wherein each level represents frequency contributions between adjacent resolutions of the image and each subband comprises a plurality of tiles; and

entropy coding each said tile into a bitstream, wherein said entropy encoding step comprises the following sub-steps:

entropy encoding the tiles of the low frequency subband into the bitstream; and

entropy encoding the tiles of the high frequency subbands into the bitstream in level and tile order.

62. A method as claimed in claim 61, wherein the method further includes the steps of:

nominating two or more levels as one said level for the purposes of entropy encoding the tiles of the high frequency subbands into the bitstream in level and tile order.

63. The method as claimed in claim 61, wherein the coded representation is a multiple level discrete wavelet transform of the digital image.

64. The method as claimed in claim 61, wherein the high frequency subbands are entropy encoded in levels of decreasing order.

65. The method as claimed in claim 64, wherein the high frequency subbands of the same level are entropy encoded in tiles of increasing order.

66. The method as claimed in claim 61, wherein the entropy encoding step further includes a quantisation step.

67. A method as claimed in claim 61, wherein said entropy encoding step of the tiles of the high frequency subbands comprises:

entropy encoding a tile triplet as a single unit.

68. A method as claimed in claim 61, wherein said tiles are of a constant size.

69. A method as claimed in claim 61, wherein each said subband comprises an equal number of tiles.

70. An apparatus for encoding a digital image, the apparatus including:

means for applying a linear transform to said image to produce a non-redundant multiple resolution frequency domain representation of the image, said representation comprising one low frequency subband and a plurality of high frequency subbands

arranged in levels, wherein each level represents frequency contributions between adjacent resolutions of the image and each subband comprises a plurality of tiles; and

means for entropy coding each said tile into a bitstream, wherein said entropy encoding means comprises the following:

5 means for entropy encoding the tiles of the low frequency subband into the bitstream; and

means for entropy encoding the tiles of the high frequency subbands into the bitstream in level and tile order.

71. The apparatus as claimed in claim 70, wherein the apparatus further includes:

10 means for nominating two or more levels as one said level for the purposes of entropy encoding the tiles of the high frequency subbands into the bitstream in level and tile order.

72. The apparatus as claimed in claim 70, wherein the coded representation is a multiple level discrete wavelet transform of the digital image.

15 73. The apparatus as claimed in claim 70, wherein the high frequency subbands are entropy encoded in levels of decreasing order.

74. The apparatus as claimed in claim 73, wherein the high frequency subbands of the same level are entropy encoded in tiles of increasing order.

20 75. The apparatus as claimed in claim 70, wherein the entropy encoding means further includes a quantisation means.

76. An apparatus as claimed in claim 70, wherein said means for entropy encoding the tiles of the high frequency subbands comprises means for entropy encoding a tile triplet as a single unit.

77. An apparatus as claimed in claim 70, wherein said tiles are of a constant size.

25 78. An apparatus as claimed in claim 70, wherein each said subband comprises an equal number of tiles.

79. A computer program product comprising a computer readable medium having recorded thereon a computer program for encoding a digital image, the computer program product comprising:

30 means for applying a linear transform to said image to produce a non-redundant multiple resolution frequency domain representation of the image, said

representation comprising one low frequency subband and a plurality of high frequency subbands arranged in levels, wherein each level represents frequency contributions between adjacent resolutions of the image and each subband comprises a plurality of tiles; and

5 means for entropy coding each said tile into a bitstream, wherein said entropy encoding means comprises:

means for entropy encoding the tiles of the low frequency subband into the bitstream; and

10 means for entropy encoding the tiles of the high frequency subbands into the bitstream in level and tile order.

80. The computer program product as claimed in claim 79, wherein the computer program product further includes:

15 means for nominating two or more levels as one said level for the purposes of entropy encoding the tiles of the high frequency subbands into the bitstream in level and tile order.

81. The computer program product as claimed in claim 79, wherein the coded representation is a multiple level discrete wavelet transform of the digital image.

82. The computer program product as claimed in claim 79, wherein the high frequency subbands are entropy encoded in levels of decreasing order.

20 83. The computer program product as claimed in claim 82, wherein the high frequency subbands of the same level are entropy encoded in tiles of increasing order.

84. The computer program product as claimed in claim 79, wherein the entropy encoding means further includes a quantisation means.

25 85. The computer program product as claimed in claim 79, wherein said means for entropy encoding the tiles of the high frequency subbands comprises means for entropy encoding a tile triplet as a single unit.

86. The computer program product as claimed in claim 79, wherein said tiles are of a constant size.

30 87. The computer program product as claimed in claim 79, wherein each said subband comprises an equal number of tiles.